



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/588,721

08/08/2006

Hideki Ando

129026

1978

25944 7590 11/10/2010  
OLIFF & BERRIDGE, PLC  
P.O. BOX 320850  
ALEXANDRIA, VA 22320-4850

EXAMINER

YANCHUK, STEPHEN J

ART UNIT

PAPER NUMBER

1729

NOTIFICATION DATE

DELIVERY MODE

11/10/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction25944@oliff.com  
jarmstrong@oliff.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/588,721	<b>Applicant(s)</b> ANDO ET AL.	
	<b>Examiner</b> STEPHEN YANCHUK	<b>Art Unit</b> 1795	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 August 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 and 5-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. All outstanding objections and rejections are withdrawn in light of applicant's amendment filed on 8/26/2010
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in prior office action.
3. The new grounds of rejection set forth below are necessitated by applicant's amendment filed on 08/26/2010. The following action is properly made final.

### ***Claim Rejections - 35 USC § 103***

1. Claim 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katsunori et al (JP 2001-313066), and further in view of Masahito (JP 2000-100410).

Claim 1: Katsunori teaches a separator made of non-woven fiber fabric that comprises sulfonated polypropylene fibers [22]. The non-woven fabric layers are laminated [39]. The specifics of the dimensions of the separator are taught to have an area density of 60-89g/m<sup>2</sup> [Claim 7] and specific surface area of 0.6-0.9 m<sup>2</sup>/g [Claim 5] [23]. Katsunori fails to teach the separator being processed with sulfuric anhydride and fails to state the thickness.

Masahito teaches fabrication of a fibrous separator [18] to be 0.17mm thick [Claim 1]. It would have been obvious to incorporate the teaching of Masahito with Katsunori because Masahito teaches the control of thickness can suppress the increase of defects [Problems to be solved].

In an effort to match the prior art teaching to the instant application, Katsunori teaches 60<A<89 and .6<B<.9 and is silent to a measurement for C. Masahito teaches

Art Unit: 1795

C=0.17. Referring to table 1, the prior art teaches the overlapping ranges of the instant application. It is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974)

Claim 1 defines the product by how the product was made. Thus, claim 1 is a product-by-process claim. For purposes of examination, product-by-process claims are not limited to the manipulation of the recited steps, only the structure implied by the steps. See MPEP 2113. In the present case, the recited steps imply a structure that comprises sulfonated fibers. The reference suggests such a product.

Claim 3: Katsunori teaches pouring 20g of alkali electrolytic solution into the battery wand having a rated capacity of 6.5Ah whereby the electrolyte is 3.07g/Ah [39]

2. Claim 2, 5-7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katsunori et al (JP 2001-313066) and Masahito (JP 2000-100410) as applies to claim 1 above, and further in view of Sato et al (PGPUB 2003/0091903).

Katsunori and Masahito teach a nonwoven fiber separator having internally sulfonated fibers wherein the dimensions have controlled area density, specific surface area, and thickness. It is not taught to vary the sulfonation degree and use split type compound fibers.

Sato teaches a separator for alkaline storage batteries that have variations in the degree of sulfonation [abstract, 17]. The non-woven fabric [29] is taught to be polyethylene, polypropylene, or core/sheath structure of polypropylene that is coated with polyethylene [18]. The content of the first resin is taught to be 10-80wt% [20]. It is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974). It would have been obvious to use Sato's fibers with the above prior art because Sato teaches increasing air permeability with high liquid retention properties [Abstract].

3. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katsunori et al (JP 2001-313066), and further in view of Masahito (JP 2000-100410) and Gowikawa et al (JP 07-134979).

Claim 1: Katsunori teaches a separator made of non-woven fiber fabric that comprises sulfonated polypropylene fibers [22]. The non-woven fabric layers are laminated [39]. The specifics of the dimensions of the separator are taught to have an area density of 60-89g/m<sup>2</sup> [Claim 7] and specific surface area of 0.6-0.9 m<sup>2</sup>/g [Claim 5]

Art Unit: 1795

[23]. Katsunori fails to teach the separator being processed with sulfuric anhydride and fails to state the thickness.

Masahito teaches fabrication of a fibrous separator [18] to be 0.17mm thick [Claim 1]. It would have been obvious to incorporate the teaching of Masahito with Katsunori because Masahito teaches the control of thickness can suppress the increase of defects [Problems to be solved].

In an effort to match the prior art teaching to the instant application, Katsunori teaches  $60 < A < 89$  and  $.6 < B < .9$  and is silent to a measurement for C. Masahito teaches  $C = 0.17$ . Referring to table 1, the prior art teaches the overlapping ranges of the instant application. It is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974)

Gowikawa teaches a separator comprising polyolefin material [abstract. 10]. The separator is taught to be a non-woven polypropylene fabric of thickness 0.15mm thick [13]. The method of sulfonation occurs by sulfonic anhydride [Claim 2]. Since the sulfonation occurs by the same material on a porous body whereby the internal elements of the fiber would become sulfonated [10]. It would have been obvious to incorporate Gowikawa's teaching of the method of sulfonation because Gowikawa

Art Unit: 1795

teaches a method of increasing the effectiveness of the hydrophilization processing and thinning the separator layer [9-11].

Claim 3: Katsunori teaches pouring 20g of alkali electrolytic solution into the battery wand having a rated capacity of 6.5Ah whereby the electrolyte is 3.07g/Ah [39]

4. Claim 2, 5-7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katsunori et al (JP 2001-313066), Masahito (JP 2000-100410), and Gowikawa et al (JP 07-134979) as applies to claim 1 above, and further in view of Sato et al (PGPUB 2003/0091903).

Katsunori, Masahito, and Gowikawa teach a nonwoven fiber separator having internally sulfonated fibers wherein the dimensions have controlled area density, specific surface area, and thickness. It is not taught to vary the sulfonation degree and use split type compound fibers.

Sato teaches a separator for alkaline storage batteries that have variations in the degree of sulfonation [abstract, 17]. The non-woven fabric [29] is taught to be polyethylene, polypropylene, or core/sheath structure of polypropylene that is coated with polyethylene [18]. The content of the first resin is taught to be 10-80wt% [20]. It is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16

Art Unit: 1795

USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974). It would have been obvious to use Sato's fibers with the above prior art because Sato teaches increasing air permeability with high liquid retention properties [Abstract].

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-3, 5-7 have been considered but are moot in view of the new ground(s) of rejection.
2. The claim now is specific to an assembly of fibers. The previous rejection pertained to the interstitial between fibers being sulfonated. The new definition further restricts the fibers themselves to be sulfonated.
3. Arguments pertaining to "sulfuric anhydride" being a structural limitation are not found persuasive. "Sulfuric anhydride" is a method of sulfonation and the fibers are structurally equivalent through other methods and processes of sulfonation.

### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not



Art Unit: 1795

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN YANCHUK whose telephone number is (571)270-7343. The examiner can normally be reached on Monday through Thursday 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ula Ruddock can be reached on 571-277-1481. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/STEPHEN YANCHUK/  
Examiner, Art Unit 1795

/Ula C Ruddock/  
Supervisory Patent Examiner, Art Unit 1795